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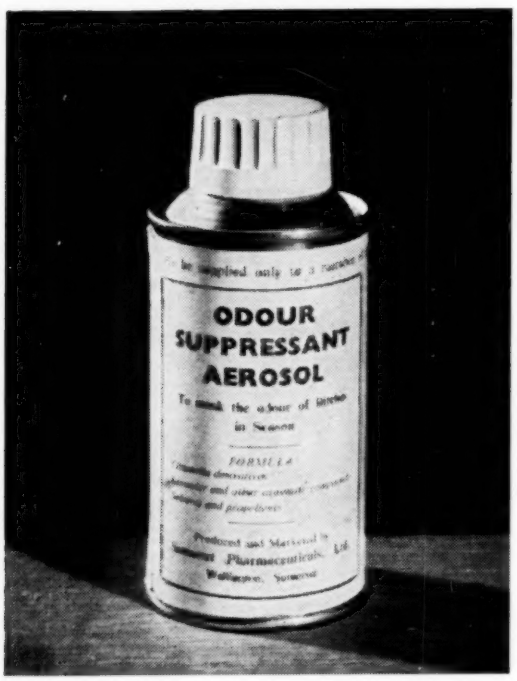

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The Well of English

"AS a student reads," wrote a correspondent not long ago, "so he will write"; and an addendum might be added to the articles on veterinary education published in these columns, suggesting that, during the curriculum, a fleeting hour now and then might be spared in order to baptise students in "the well of English undefiled." Not many years ago a paper was read to the British Association urging scientists to express themselves simply, lucidly, and according to the rules of their mother tongue. Its effect has been modest to say the least, and even members of our own profession are not exempt from the paper's strictures.

"I will not," our correspondent went on, "re-read a sentence half a dozen times in order to try to find out what, if anything, is intended by it." He would never make an editor! Dr. Johnson wrote once, at a time when he was discharging this same thankless task, that he was "much vexed by authors." What editor is not, he (or they) of THE VETERINARY RECORD included?

After a thousand repetitions of such adjectives as "bovine" being used as nouns little more than a sigh is left in the breast; but the frequency with which *post mortem* follows suit—or is even used, on occasion, as a verb—weighs upon the heart. There is more than this. Do animals (be they bovines or ovines) never eat? Must they always ingest? And when their appetites fail them do those who attempt in vain to titillate their jaded palates know that the Shorter Oxford defines "inappetence" as "without desire or longing"—a definition which delicacy makes it impossible to enlarge upon?

Then there is the mystery of the word "peculiar." "Some of them," Mr. Bojanus said, referring to politicians, "wear peculiar 'ats." As the manufacturer of the first pair (so far as is known) of inflatable trousers, Mr. Bojanus may be allowed some small liberty; and as one familiar with the modes and speech of the upper classes he may be taken to have meant, correctly, hats worn exclusively (or peculiarly) by publicity-seeking Parliamentarians. But if one of our patients shows "peculiar" symptoms these are not—as the writer intends—strange or unusual symptoms; they are those precisely applicable to the condition which is being described.

Charity precludes us from dwelling upon such popular favourites as "prior to," "along with," and the nice distinction between thoroughbred and Thoroughbred; for if authors err our friends in the advertising business may be said to err even more culpably. Oddly enough they err, it may be suggested, even in one of the expressions proper to their own craft. What is an "advertising manager"? A manager who stoops to self advertisement, presumably. How often is such an official called (correctly?) an advertisement manager, *i.e.* a manager of published advertisement? Nor have "incorporated practitioners in advertising" (in more homely vocabulary advertisement agents) much truck with the nice art of meiosis. They are followers almost to a man of the directive Mr. Crummles gave to Nicholas Nickleby about the tubs. That immortal actor wished it clearly to be known that these were *real* tubs, and no hanky-panky; and in like vein advertisements seldom suffer from false modesty.

In this, it may be, they might find a moral in the story which has been told of a former Peking correspondent of *The Times*. Being asked by a mandarin what his salary was he replied, with Chinese depreciation, that so paltry a sum could not be named to so exalted a person. The reply got back to the newspaper's directors who, unaccustomed to Chinese social manners, took the reply literally and doubled the correspondent's pay.

The Control of Poultry Red Mite with 1-naphthyl-N-methyl Carbamate

BY

I. R. HARRISON

Boots Pure Drug Co. Ltd., Research Department
Veterinary Science Division, The Priory, Thurgarton,

SUMMARY.—Extensive tests with Sevin 50 per cent. wettable powder have shown that it gives good control of poultry red mite* (Dermanyssus gallinae [*Deg.*]) *when used as a spray. The spray does not affect egg production or cause taint. Tests have shown that Sevin has some systemic action against this parasite.*

Introduction

POULTRY red mite is a very difficult parasite to control. Many poultry houses carry low populations of this mite throughout the year and these populations flare up usually during the summer months causing reduction in egg production and a considerable nuisance to workers entering the poultry houses. The mite feeds mainly during the hours of darkness and after feeding it returns to the structure of the house where it remains in cracks and crevices. It is only, therefore, when populations get very large that the poultry man notices the mites during the daytime. When heavy infestations are present the mites hang from cobwebs in the house, and it is impossible to enter an infested house without coming into contact with the mites. They will feed on human beings and their bite is extremely irritating and unpleasant. Many insecticides have been used for the control of poultry red mite. McQueen (1948) reported that D.D.T. sprays at 1 per cent. and 0.5 per cent. gave a good control and this confirmed the work of Hixson *et al.* (1947) who found that benzene hexachloride also was effective against this parasite. More recently Raun (1956) reported malathion gave good control of mite when used as a 1 per cent. spray.

Because the poultry red mite spends so much of its time in the structure of the poultry house, it is extremely difficult to judge the effectiveness of any control measure. To overcome this difficulty, a sampling device which will be described in detail elsewhere, was constructed which attracts and traps the mites in an infested poultry house. Using this apparatus, infested poultry houses can be sampled before and after the treatment and in this way an accurate assessment of effectiveness can be determined. For experimental work eight 100 cu. ft. poultry arks were infested with poultry red mite and using the sampling apparatus population studies have been carried out over a 2-year period. In general it has been found that the mite populations reach their peak in July and August, but the mites remain active throughout the whole year. Partial eradication, therefore, using inefficient sprays has very little effect.

We have found that D.D.T., benzene hexachloride, 0,0-dimethyl 0-2,4,5-trichlorophenyl†, and pyrethrin sprays, give control of only short duration. In a badly infested poultry house 3 to 4 weeks later the mite populations can return to a very high level. Many poultry keepers throughout the country still rely upon creosote and paraffin treatments and an assortment of other relatively ineffective perch-paints to keep poultry red mite within bounds.

* 1-naphthyl-N-methyl carbamate.
† Korlan.

Experimental

Laboratory tests

Sevin compared very favourably with the other chemicals used for the control of poultry red mite when it was tested in a preliminary insecticide screen. It was then given further tests at a range of dilutions. All stages of the mite were exposed in 2 in. × 1 in. glass tubes to filter paper treated with test material. The compound was pipetted on to the paper in an acetone solution. When the solvent had evaporated the mites were sucked into the tubes which were then sealed with rubber plugs. The tubes were kept at 25° C., 80 to 90 per cent. relative humidity for 24, 48, and 72 hours, at which times the percentage mortalities were checked. Two replicates were set up at each concentration and approximately 20 mites were exposed in each tube. Table I shows the results of these tests.

TABLE I
PERCENTAGE MORTALITY OF POULTRY RED MITE

	24 hours			48 hours			72 hours		
	0·5	0·05	0·01	0·5	0·05	0·01	0·5	0·05	0·01
D.D.T.	0	0	0	8	0	0	26	0	0
B.H.C.	0	0	0	19	0	0	100	0	0
Sevin	100	100	100	100	100	100	100	100	100

It was found subsequently that Sevin was active at as low as 0.0025 per cent.

Field Trials

Because of Sevin's activity in the laboratory it was decided to do field tests using two small poultry houses. These units had been infested with poultry red mite and at the time of the tests, counts of between 150 and 200 mites were found after a half hour sampling. This indicates a very large total population in the houses. One gallon of 0.5 per cent. spray was prepared using the 50 per cent. wettable powder, and this was applied through a coarse sprayer to the interior of one of the poultry units. This was sufficient to thoroughly soak the crevices and perches of the house. The second house was kept as a control. After spraying, both houses were sampled at regular intervals to compare the Sevin treated house with the control. Two days after spraying only 10 mites were found in the sampling apparatus and some of

these died subsequently. Counts of 150 to 200 were recorded in the control house. The infestation in the Sevin treated house remained at this very low level for the rest of the season. This trial was repeated using a concentration of 0.25 per cent. Sevin, with similar results. In both cases 6 chickens were left in the houses during treatment without ill effect.

Following the success of these small tests, larger field tests were planned. A report was received from a local poultry keeper of a heavy infestation in a deep litter house and this was examined. It was found that on this farm a double shift system had been adopted, and on the end of a large deep litter house a brick annexe had been constructed. A 12-hour shift system was used and 500 birds were kept in the deep litter house and 500 in the adjoining annexe. The annexe was in total darkness and every 12 hours the birds were changed round. The infestation was found to be present in this annexe where the conditions were ideal for poultry red mite. The birds rested on a slatted floor and as they were very close together the temperature was quite high. The droppings from the birds went through the slatted floor into a deep pit which was cleared out at monthly intervals. Several methods of control had been tried without success, because the birds could not be removed from the building for more than half an hour.

The dropping pit was thoroughly cleaned and two gallons of 0.25 per cent. Sevin were sprayed round the floor and walls of the annexe early in the morning when the change over of the birds was taking place. Two gallons of spray were sufficient to cover the walls and the floor of the house which was approximately 14 feet square. The deep litter house was found to be reasonably free of infestation and this was not treated. Both the deep litter house and the "night annexe" were examined at regular intervals after spraying, and for 4 months no mites have been found.

Three other infested poultry houses were also treated with 0.25 per cent. Sevin. In the first house a small hut (12 ft. × 12 ft.) had been constructed on the end of a large deep litter house. The birds used this hut for perching during the night and it was found to have a moderate infestation of mites, particularly round the slatted floor. The owner said that in spite of frequent treatments with creosote and paraffin he had been unable to eradicate the mites. Again the conditions were ideal for the rapid reproduction of poultry red mite. The birds were removed to the deep litter house and two gallons of 0.25 per cent. spray was applied with a hand pump to the slats, floor and doors of the hut. Before spraying, the owner had complained of a drop in egg production and the birds appeared in poor condition. On examination of the house after spraying no live mites have been found and a 25 per cent. increase in egg production has been noted. The remaining 2 poultry houses were only lightly infested with poultry mite, but since spraying no infestations have been found. One of these units was a large deep litter house with a framework of slats at one end on which the birds perched. Only the perches in this case were sprayed because this was the only area where the mites were found. The third house consisted of a small hut used for about 50 birds. In this hut 1 gallon of spray was sufficient to coat the inside surface thoroughly and immediately after spraying the birds were allowed to come in contact with the treated surfaces. Thorough examination has shown complete eradication of the infestation.

The effect of spraying with Sevin on Egg Production

Although it is not recommended that the birds are actually sprayed with the 0.25 per cent. spray, they come in contact with the treated surfaces and in some cases the food and water supplies may be contaminated. It was necessary therefore to make sure that contamination in this way would not affect egg production. Two groups of laying birds in a battery were selected for trial. One group, which was kept as a control comprised 13 birds, and there were 20 treated birds. The spraying was done with a small hand pressure sprayer and the control birds were sprayed with water. Approximately one pint of spray was applied to each bird in turn, and the treated birds were sprayed with 0.5 per cent. Sevin. This amount of spray was sufficient to thoroughly soak the birds and also the walls of the battery cage. The food and water were left in place during this spraying and a small amount of spray was applied to each. Table II shows the egg production from these birds for the 9 days before treatment and the 9 days after spraying.

TABLE II
THE EFFECT OF 0.5 PER CENT. SEVIN SPRAY ON EGG PRODUCTION

	Total for 9 days before treatment	Average per bird	Total for 9 days after spraying with 0·5 per cent. Sevin	Average per bird
Control (13)	66	5·08	70	5·38
Treated (20)	94	4·70	113	5·65

It can be seen that after spraying both the control and the treated birds produced slightly more eggs. The 0.5 per cent. Sevin treatment caused no reduction in egg production. After this trial the treated birds were resprayed with 2 per cent. Sevin, and Table III shows the egg production for the 9 days following treatment. The control birds were again sprayed with water. The Sevin treatment caused no reduction in the number of eggs produced.

TABLE III
THE EFFECT OF A 2 PER CENT. SEVIN SPRAY ON EGG PRODUCTION

	Total for 9 days after spraying with 2 per cent. Sevin	Average per bird
Control (13) ...	61	4·69
Treated (20) ...	100	5·00

There was no evidence of taint in any of the eggs from the sprayed birds.

Systemic Activity

Kraemer and Furman (1959) reported that Sevin was active against *Ornithonyssus sylviarum* when mixed with the food given to infested chickens. This mite spends most of its adult life on the bird so that systemic control is more practicable than with poultry red mite which is only on the birds during feeding.

In view of this activity against the northern fowl mite, tests were carried out using both guinea-pigs and chickens to find out whether Sevin was active against mosquitoes and poultry red mite.

Guinea-pigs were dosed by stomach tube with Sevin at the rates of 100 mg. to 400 mg. per kg. One, 4 and 12 hours after dosing the guinea-pigs were anaesthetised with pentobarbitone sodium* and exposed to unfed adult female mosquitoes (*Aëdes aegypti* [*L.*]). The fully fed female mosquitoes were kept in recovery jars and observed for 48 hours after feeding. No deaths occurred amongst the mosquitoes at any of the concentrations.

Following these experiments chickens were dosed by capsule with varying amounts of 50 per cent. Sevin wettable powder: 20 to 30 unfed mites were fed on the treated chickens 4 to 8 hours after dosing. Table IV shows the results of these tests.

TABLE IV
THE SYSTEMIC ACTIVITY OF SEVIN AGAINST POULTRY RED MITES

	Dose mg. per kg.	Percentage mortality amongst fed mites
1.	400	100
2.	400	100
3.	200	100
4.	200	93
5.	100	0
6.	100	31

It was found that not all the mites fed on the first night. Tests with the unfed mites showed that Sevin was active for a relatively short time in the blood and no mites died after feeding on the treated birds 24 hours later. It can be seen from Table IV that a dose of at least 200 mg. per kg. was necessary to give high mortality figures. As an alternative to one large single dose 4 birds were given daily doses for 4 days at 100 mg. per kg. and 50 mg. per kg. Each night fresh unfed mites were exposed to the treated birds but no mortalities were recorded throughout the 4-day period.

Several successive daily doses of 200 mg. per kg. would be necessary to reduce poultry red mite populations as only a small percentage of the total number of mites in an infested house feed on any one night. Three successive daily doses of 200 mg. per kg. were given to observe the effect on the mites on the birds, and on egg production. As before, the dose was given by mouth using a gelatine capsule. Thirteen laying birds were kept as controls and 20 laying birds were given daily doses. Tests with mites confirmed that at 200 mg. per kg. high mortality of mites occurred. Unfortunately this level of dosing seriously affected the health of the birds and their egg production. Table V shows the egg production for the 9 days before and after treatment. It can be seen that there was a significant decrease in egg production from the treated birds.

TABLE V
THE EFFECT OF THREE DAILY DOSES OF SEVIN ON EGG PRODUCTION

	Total for 9 days before dosing	Average per bird	Total for 9 days after dosing	Average per bird
Control (13)	61	4·69	58	4·46
Treated (20)	100	5·00	54	2·70

* Nembutal.

As a result of these experiments it was decided that systemic control of poultry red mite with Sevin would not be practicable.

Egg Taint

Although it would be recommended that birds and nesting boxes should be removed whilst spraying infested houses, experiments were planned to check that contamination of the food or drinking water with Sevin would not taint eggs produced after treatment. Some of the eggs from the systemically treated birds were collected and sprayed with 0.25 per cent. Sevin. Treated eggs were then mixed with control eggs and a consumer taint trial was carried out. In no case was taint noticed in any of the treated eggs which could not be differentiated from untreated controls.

Conclusions

From these trials it is clear that Sevin used as a spray gives an excellent control of poultry red mite infested buildings. The spray diluted to 0.25 per cent. should be applied to the perches and inside walls of the infested premises, preferably with the birds removed. In severe cases a second spray may be necessary 2 to 3 weeks after the first, but this will only be necessary where conditions are ideal for the reproduction of poultry red mite. It has been found in practice that this applies especially to the small huts used for night roosting. The temperature in these annexes is usually very high and they are extremely difficult to clean out once they become infested.

The nesting-box materials and any eggs should be removed before the house is sprayed, but there has been no indication so far of Sevin causing taint. It has already been mentioned that the heavy populations of poultry red mite occur during July and August, but wherever possible poultry keepers should be encouraged to spray during May and June before the small infestations build up to proportions which will affect the egg production.

Acknowledgments.—I am grateful to Mr. W. M. Brownlie, Head of Veterinary Science Division for his help and the Directors of Boots Pure Drug Company Limited for permission to publish these results. I wish to thank Mr. J. Bennett for assistance with the field trials and Mr. J. W. G. Leiper for help with some of the systemic control experiments.

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Laparo-cystotomy for Urinary Calculus in a Gelding

BY

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Subject. A bay, hunter gelding; 11 years old and weighing 10¼ cwt.

History. (October 1st, 1959.) The animal was attended at the request of Mr. J. E. Johnson, M.R.C.V.S., of Leicester who furnished the following case history and diagnosis. The horse was first attended on August 25th, 1959, when the owner stated that it had lost some of its "spirit" during the previous 14 days. Some blood had been noticed in the urine. A urine sample on September 6th was strongly positive for protein and there was a growth of Staphylococci on culture. Antibiotic treatment was given for 5 days. A second urine sample on September 17th was positive for protein and blood but there were no casts in the spun deposit. During this time the same clinical picture had been present; when in the stable urine was of normal colour but at exercise chocolate-coloured urine was passed. On September 30th a rectal examination was made and the case diagnosed as one of calculus in the urinary bladder. Mr. G. Eaton, F.R.C.V.S., of Market Harborough, was called as a second opinion and he agreed with the diagnosis.

Examination. (October 2nd, 1959.) On admission to the Field Station the horse was found to be in good condition, bright, and eating. Pulse rate 44, temperature 101° F. The penis was partially protruded almost continuously and there was frequent straddling of the hind limbs with attempts to urinate but only small quantities (about an ounce) were voided. Rectal examination revealed a hard, spherical mass on the pelvic floor about 3 in. in diameter. This was diagnosed as the urinary bladder firmly contracted on a calculus. Oxytetracycline* 1 g. was given.

Urine examination (October 3rd, 1959) was as follows: *p*H 9.0, strongly positive for albumin and occult blood. Microscopical examination showed large numbers of red blood cells, polymorphonuclear leucocytes, and epithelial cells; uric acid crystals were also present. No organisms were found in direct smear or in culture.

It was decided to continue with antibiotic treatment for a further 4 days in an attempt to sterilise the bladder before operation.

Technical considerations in regard to operation. Considerable thought was given as to the best way in which to approach this case surgically. Laparotomy was believed to be the only approach which offered any chance of success but doubt was felt as to the possibility of drawing the firmly contracted bladder from its intrapelvic situation to a convenient site on the abdominal wall and while this might be possible for the removal of the calculus, could the empty bladder be maintained in this position for the subsequent closure of the incision by suture? Clearly the most suitable site for incision of the abdominal wall would be the mid-line immediately in front of the pelvic inlet, but the animal was a gelding. The only report known to the authors of a laparotomy approach to surgery of the urinary bladder in the horse was that of Larsen of Sydney (1954) who successfully performed a partial cystectomy in a mare for localised cystitis adopting a suprapubic mid-line incision.

It was decided that the only possible site was the area immediately in front of the external inguinal ring lateral to the preputial elevation. It was feared that the complex venous vascularity of the area might cause complications but this risk would have to be faced. As to the length of the incision, this, it was thought, would be chiefly governed by the likelihood that it would be necessary for a hand and arm to be in the abdomen throughout the whole of the bladder interference, gripping the neck of the organ and continuously maintaining very firm traction on it for otherwise the organ would slip back to its normal pelvic position. An incision 8 in. long was decided on, some 2 in. lateral to the prepuce on the left side, with the posterior commissure about 2 in. in front of the inguinal ring.

Operation

Anaesthesia and restraint. (October 6th, 1959.) The horse was cast by the rapid intravenous injection of 2 g. pentobarbitone sodium immediately followed by 92 mg. of succinylcholine chloride. The animal "went down" quietly and there was a brief period of apnoea. After applying hobbles, deep general anaesthesia was induced by the slow intravenous injection of 70 g. of chloral hydrate in 10 per cent. solution. Having induced anaesthesia the horse was placed in dorsal recumbency and the left hind leg released from the hobbles and drawn well back in order to give a clear field for operation. The total operation time was 1 hour. The induction anaesthetics gave full anaesthesia for 40 minutes and then some straining commenced during peritoneal manipulation. Anaesthesia was then deepened and maintained for the remaining 20 minutes by the periodic intravenous injection of thiopentone sodium, a fotal of 3.3 g. being given. On completion of the operation the left hind limb was returned to the hobbles which were not removed until there were signs of returning consciousness. The horse rose to its feet without stimulation 4 hours after completion.

Operative experiences. Incision of the abdominal wall was uncomplicated; no significant haemorrhage was encountered. As is generally the case in laparotomy in the horse, the considerable fat depositions both subcutaneously and retroperi-

* Terramycin.

toneally were a nuisance. A hand was introduced into the abdominal cavity and directed backwards and downwards into the pelvis. Here the contracted bladder, which formed a mass slightly smaller than a clenched fist, was easily located and gripped behind the calculus. By applying slow and gradually increasing traction to the organ it was possible to draw it just adjacent to the lips of the posterior commissure of the incision. In this way one of the operators kept the organ in this position throughout the whole of the interference with it. The presence of his forearm in the abdomen also served the useful purpose of occluding the remainder of the incision and preventing the exposure of intestine. An incision of just sufficient length (about 2½ in.) to remove the calculus was made over the vertex of the bladder including the urachal cicatrix. The surface of the calculus was found to be very soft and friable and pieces which were broken away during its extraction were carefully removed with gauze. The bladder wall was closed in two layers using No. 3 catgut. The first, a continuous suture taking in the mucosa only, and the second, a superimposed layer of interrupted sutures including the musculature and serosa. No attempt was made to invert the bladder wall in the Lembert fashion. The abdominal wall was closed in 4 layers. The first, of No. 3 interrupted catgut sutures, included the deep layers of the rectus muscle, retroperitoneal fat, and peritoneum. The second, of interrupted double-strand catgut, took in the abdominal tunic and the superficial muscle layers. The third comprised a series of catgut sutures drawing together the subcutaneous fat; while the last, mattress sutures of braided nylon, served to close the skin.

Antibacterial treatment was as follows. Five mega units of procaine penicillin dissolved in a small volume of water were poured into the abdominal cavity and all layers of the abdominal incision were freely treated with penicillin cerate and dusted with sulphanilamide during suturing.

A disturbing feature of closure of the muscle layers was frequent puncture of the ramifying branches of the external pudic vein when inserting the deep sutures. It was impossible to control the venous bleeding by forcipressure or ligature and while no alarm was felt in regard to serious haemorrhage, the knowledge that there would be extensive extravasation in the deeper layers of the wound was disconcerting, particularly in regard to its post-operative course.

Post-operative Course

October 7th. Urination had occurred during the night. At 9 a.m. the animal was seen to pass a volume of urine estimated at 6 to 8 oz. There was no blood. The horse was dull but picking food. Pulse rate 72; temperature 103. There was no straining or straddling of the hind legs. Marked reactionary and oedematous swelling was present around the wound site: 2 g. oxytetracycline and 1 g. pethidine were given.

October 8th. No change in the general picture; appetite improved; pulse 70. Urination infrequent, volume put at 8 to 10 oz. Oxytetracycline and pethidine continued.

October 9th. Horse much brighter; appetite good, pulse 60. Urination appeared to be normal. The ventral abdominal oedema along the course of the posterior abdominal vessels more marked. It comprised a tense ridge, about 9 in. wide and 4 in. deep, extending forwards almost to the elbows. Animal disinclined to move about. Oxytetracycline replaced by chloramphenicol*, 1.5 g. twice daily.

October 10th. Improvement maintained; urinating normally, pulse 60.

A daily record is no longer necessary. Chloramphenicol was continued until October 13th.

October 14th. Animal very well in itself; urinating, feeding. Pulse 48, temperature 101. Oedema still present but less tense and extending to between the forelegs. From this point the oedema rapidly subsided.

October 19th. Horse very well, oedema almost gone. Examination of the wound revealed some suture infection in the anterior part of the wound but no sign of breakdown. These sutures were removed.

October 21st. Good health maintained. There was some discharge from the anterior suture holes. The remaining skin sutures were removed. Now that the oedema had subsided, a local swelling, the size of half an orange, was seen about 6 in. in front of the incision. This was incised under local anaesthesia. It was found to be a haematoma which extended back to the incision. The track was irrigated daily.

October 28th. Animal in normal health. Wound healing almost complete and the haematoma track was greatly reduced.

The horse was kept under observation for a further 12 days without treatment and was discharged from the Field Station on November 10th, 1959.

February 13th. Subsequent report: horse in excellent health; being hunted.

The Calculus

The calculus was oval in shape, its dimensions being 5.0 × 4.3 cm., and its weight 55 g. The surface was exceptionally rough and friable. On section the central part was seen to be much denser than the periphery. The softness of the latter was, no doubt, due to its greater organic content related to the ever-increasing degree of cystitis.

Chemical analysis: the material from the periphery was found, in the main, to comprise calcium carbonate together with traces of phosphate, sodium, and magnesium. It was probable that a small amount of triple phosphate (magnesium ammonium phosphate) was present. The composition of the centre was slightly different—calcium carbonate and also ammonium, magnesium, and silicate. Trace amounts of sodium, sulphate, and phosphate were also detected. It was probable that triple phosphate was present also.

Discussion

The question arises—what is the incidence of

* Chloromycetin.

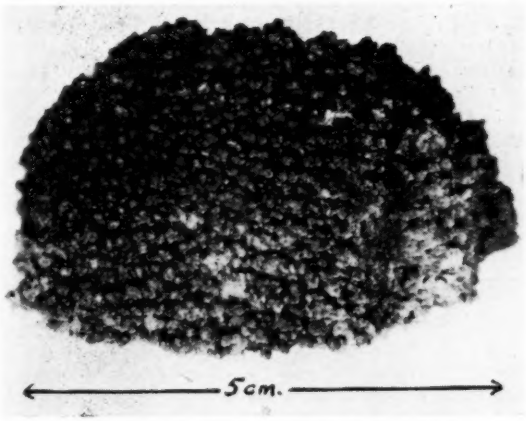

FIG. 1.—The external surface of the calculus.

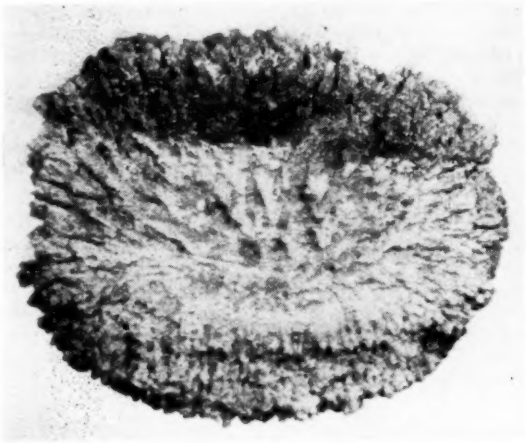

FIG. 2.—The calculus on section.

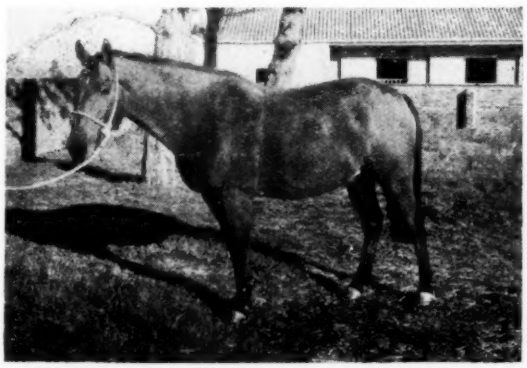

FIG. 3.—Twenty-two days after operation.

urinary lithiasis in the horse? During the past 15 years some 1,000 horse cases have been attended in consultation at this Field Station. They have been drawn from a wide area of the Midlands and North of England, and Wales. Five cases of lithiasis have been met; 3 in the gelding (of which the subject of this report is one) and 2 in the mare. Both of the other cases in the gelding were urethral obstruction by calculus; one, the size of a walnut, was situated some 5 in. beneath the ischial arch and removed by urethrotomy, and the other, the size of a child's playing marble, was at the termination of the urethra and removed by manipulation. Of the 2 mares, the first was a hunter with a calculus of the urinary bladder measuring $7 \times 6 \times 3.5$ cm., and weighing 110 g., and which was removed by manipulation per urethra. The remaining mare (cart) was a case of acute, sabulous cystitis which developed during the puerperium. In all the calculus cases, the cystitis rapidly cleared up after removal of the foreign body and the hunter mare quoted above showed no signs of a recurrence of calculus 2 years after operation. This case was dealt with before antibiotics were available. The case of sabulous bladder although greatly improved while under treatment relapsed later.

What the ultimate outcome of the case under review will be must await further observation.

Acknowledgments.—We wish to acknowledge the help received during operation from our clinical colleagues Messrs. P. J. N. Pinsent and H. E. Ritchie who assessed and maintained anaesthesia during the later stages. We would also express our thanks to Messrs. P. Porter and R. J. Treacher of the department of Veterinary Preventive Medicine who analysed the calculus.

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SALARY AWARDS TO STATE VETERINARY OFFICERS

Certain salary improvements have been granted to veterinary surgeons in the service of the Ministry of Agriculture. These affect Officers and Research Officers in Grade 2, in Grade 1, and also Senior Research Officers and Divisional Veterinary Officers. The improvements are back-dated to July, 1958. The new scales may be subject to variation following the completion of an Enquiry by the Pay Research Unit into salaries and conditions in the veterinary grades concerned.

The Effect of Environmental Temperature on the Response of Growing Pigs to Dietary Supplements of an Antibiotic and Copper Sulphate

BY

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SUMMARY.—Thirty Large White pigs were kept in groups of 3 in pens maintained at an environmental temperature of about 65° F. and 30 related pigs in similar pens were kept at a temperature of about 54° F. At each environmental temperature 10 pigs were fed a basal diet, 10 this diet supplemented with oxytetracycline hydrochloride at the rate of 20 mg. per lb. of diet, and 10 pigs were given the basal diet plus 0.1 per cent. of copper sulphate.

On the unsupplemented diet the pigs in the warm pens grew more rapidly and utilised their food more efficiently than those in the cool pens. Both the antibiotic and the copper sulphate supplemented diets had the greatest effect on weight gain and the efficiency of food utilisation in the pigs kept at the cool level, and the increased efficiency was significant in all cases. The rate of weight gain of the pigs in the warm environment was not significantly increased by either additive. The efficiency of food utilisation by the pigs in the warm pens was significantly increased by the addition of copper sulphate, but was not significantly affected by the antibiotic.

Introduction

IT is now well established that the low level feeding of antibiotics will improve the growth rate of apparently healthy pigs after weaning by from 10 to 20 per cent., the growth promoting effect being most marked while the pigs are young. The addition of copper to the diet of fattening pigs has also been found to result in an improvement in growth rate. Barber *et al.* (1955) found that chlortetracycline* and copper supplements were equally effective in producing significant increases in the rate of live-weight gain of pigs. The increased rate of gain arising from the use of chlortetracycline was due to a significant increase in food consumption, there being no significant effect on the efficiency of food utilisation. The food consumption of the copper sulphate supplemented pigs was, however, not significantly raised, the increased gain being due to a significant improvement in the efficiency of utilisation of the food consumed.

Environmental conditions also effect the weight gain of pigs and it is generally accepted among practical pig farmers that fattening pigs kept in warm houses grow faster and more efficiently than those kept in cool houses. Sainsbury and Dunkin (1953) suggest that actual indoor winter temperatures of between 50° and 65° F. should be satisfactory. Heitman and Hughes (1949) studying pigs kept in a temperature-controlled room found that the rate of live-weight increase and efficiency of food conversion were at their maximum at an air temperature of 75° F. for pigs of 74 to 144 lb. and at 60° F. for pigs of 166 to 200 lb. live-weight. Lucas and Calder (1955a, b) reported that weaned pigs kept on a very high plane of feeding grew as well in a cold and bad piggery as in a warmer and good piggery, but that when the plane of feeding was lowered the adverse effects of the bad piggery became evident. The rations fed contained an antibiotic and unusually high levels of certain vitamins. In a subsequent experiment planned to determine whether the antibiotic and vitamin supplements affected these results, Lucas and Calder (1957) kept pigs in warm pens averaging 60° F. and cold pens averaging 44° F. All the pens had outdoor runs with air temperatures averaging 37° F. They found that procaine penicillin improved the rate of live-weight gain by 3 per cent. (significant) and feed efficiency by 2 per cent. (not significant), but that housing did not affect this response.

The objects of the experiment reported here were to investigate the effects of two environmental temperatures, both within the usually accepted range of normality, on the rate of weight gain and the food conversion ratio of pigs from weaning to about 200 lb. live-weight fed on a basal diet, the basal diet supplemented with oxytetracycline†, and the basal diet plus copper sulphate.

Experimental Method

Housing

The pigs were housed in threes in pens in a well-insulated Danish type piggery. Each pen was provided with a dunging passage from which foul air was extracted by an electric fan, and 3 feeding stalls to which the pigs were admitted twice a day for feeding. The sleeping areas of each pen, where the pigs spent most of their time, were free from draughts and were covered by low wooden ceilings to which were attached electric heating lamps. Each lamp was controlled by a thermostat set at 65° and 55° F. respectively in the warm and cool environmental pens. Wet and dry bulb thermometers were placed in the sleeping compartments of each of the pens and were read twice a day. These experiments were conducted chiefly during the winter months, and the 10 groups of pigs being housed in the cool pens and 5 of the warm pen groups were kept during this season The remaining 5 groups housed in warm pens were kept during the summer months.

* Aureomycin.

† Terramycin.

Feeding

The basal diet throughout consisted of weatings 45, barley meal 30, flaked maize 14½, fish meal 7½, grass meal 2½, vitamin supplement (A and D) ½, all parts by weight. It was fed unsupplemented, or with the addition of 20 mg. of oxytetracycline hydrochloride* per lb. of diet or with 0.1 per cent. of copper sulphate added. The pigs were fed to appetite, the weight of the meal fed to each pig being altered once or twice a week as required up to a maximum of 5½ lb. per day. The individual feeding pens enabled the food consumed by each animal to be calculated accurately. Feeding was twice daily at 8.30 a.m. and 4 p.m. The meal was fed with water, allowing 3 lb. of water to each lb. of meal. There was no other source of water.

Pigs

Thirty-six hogs and 24 gilts were used. They were all pure-bred Large Whites and were either home-bred or purchased from a virus pneumonia free herd soon after weaning at 8 weeks of age. They were then placed in the experimental pens, and were allowed about one week in which to become accustomed to their new surroundings and the feeding pens before records were made. The pigs selected were as even in size as possible. In the 5 experiments in which both the warm and cool pen pigs were kept during the winter, balanced numbers of litter mates were used in both temperature range groups. In those experiments in which the pigs in the cool pens were kept during the winter, and those in the warm pens during the summer, pigs by the same boar out of the same or related sows were used in the pens at the two temperature levels. The pigs were weighed once a week, the experiment finishing for each pig when it was ready for slaughter for bacon. The live-weights of the pigs varied from 190 to 214 lb., but the majority were between 195 and 205 lb.

Results

Although the thermostats were set at 65° and 55° F. respectively in the warm and cool environment pens, the actual temperatures achieved were not constant, and varied according to the external environmental conditions. As these tended to affect both sets of pens to the same extent, the differences between them remained fairly constant. The average temperatures attained were 65° and 54° F. respectively. No special precautions were taken to control the relative humidity, and the figures are typical of the condition of the building. The average humidity percentages were 82 for both the warm and the cool pens. The pigs in the cool pens tended to develop slightly longer and thicker coats than those in the warm pens, but did not appear to huddle more closely together when sleeping, or try to lie one on top of the other.

The average results of the 10 experiments are given in Table I. In each repetition one pig on the basal diet, one pig on the antibiotic supplemented diet, and one pig on the basal diet plus copper sulphate were kept at each of the two temperature levels.

Discussion

(1) *The effects of environmental temperature differences on the pigs on the unsupplemented diet.*

The average weekly live-weight increase of the pigs on the unsupplemented diet in the warm environment was greater than that of the pigs in the cool environment, and the difference was significant at the 5 per cent. level of significance, and was nearly significant at the 1 per cent. level.

The average food consumption per lb. live-weight increase of the pigs in the warm pens was less than that of the pigs in the cool pens, and the difference between the two averages was significant at the 1 per cent. level.

Thus, as was expected, the pigs in the warm pens grew more rapidly and utilised their food more efficiently than those in the cool pens.

(2) *Antibiotic supplemented diet*

In the warm pens the difference in average live-weight increase per week between the antibiotic fed and the control pigs was not significant, while in the cool pens the corresponding difference was significant at the 1 per cent. level of significance. A similar result was obtained when the average food consumption per lb. live-weight increase was considered, the difference between the figures for the antibiotic fed and control pigs not being significant in the warm pens, and being significant at the 1 per cent. level in the cool pens.

* Added in the form of Pfizer Ltd. Terramycin (Animal Formula soluble powder).

TABLE I

THE AVERAGE LIVE-WEIGHT GAINS OF, AND AMOUNTS OF FOOD CONSUMED PER LB. LIVE-WEIGHT INCREASE BY A TOTAL OF 60 PIGS KEPT AT TWO ENVIRONMENTAL TEMPERATURE LEVELS AND FED ON THREE RATIONS

Dietary supplement	Average increase in weight per week (lb.)					Average food consumption per lb. L.W.I. (lb.)				
	Warm pens		Cool pens		Difference (warm-cool)	Warm pens		Cool pens		Difference (cool-warm)
		Diff.		Diff.			Diff.		Diff.	
Antibiotic (A) ...	9·41	A-N 0·08‡	9·13	A-N 0·48*	0·28‡	3·33	N-A −0·01‡	3·42	N-A 0·22*	0·09‡
Copper Sulphate (C)	9·60	C-N 0·27‡	9·32	C-N 0·67*	0·28‡	3·13	N-C 0·19†	3·28	N-C 0·36*	0·15‡
None (N)	9·33		8·65		0·68†	3·32		3·64		0·32*

* Significant at the 1 per cent. level of significance. † Significant at the 5 per cent. level of significance. ‡ Not significant.

Although the pigs on the antibiotic supplemented diet in the warm environment grew more rapidly and utilised their food more efficiently than those on a similar ration in the cool environment, neither the differences between the live-weight increases nor the food consumption figures of the antibiotic fed pigs in the two environments were significant.

Thus the antibiotic was most effective when fed in the cool environment.

(3) *Copper sulphate supplemented diet*

The average live-weight gain of the pigs on the copper supplemented diet in the warm pens was greater than that of the controls, but the difference was not significant. In the cool pens the pigs fed copper sulphate grew more rapidly than the controls, and the difference between the average increases in weight per week was significant at the 1 per cent. level.

In both the warm and cool pens the pigs on the copper diet utilised their food more efficiently than those on the unsupplemented ration. In the warm pens the difference between the average food consumptions per lb. live-weight increase was significant at the 5 per cent. level and in the cool pens at the 1 per cent. level of significance.

Neither the differences between the weight increases nor the average food consumptions for the pigs at the two environmental temperatures were significant.

Thus the copper supplement was most effective in the cool pens in increasing weight gain and the efficiency of food utilisation, but the average food consumption per lb. live-weight increase was also significantly reduced in the warm pens.

(4) *General*

A comparison between the results obtained from the pigs kept on the antibiotic and copper sulphate supplemented diets showed that in both cases the additive had the greatest effect on the weight gain and the efficiency of food utilisation in the pigs kept at the cool level. The rate of weight gain of the pigs in the warm environment was not increased by either additive. The efficiency of food utilisation by the pigs in the warm pens was increased by the addition of copper sulphate, but was not affected by the antibiotic.

Grading results and carcase length measurements were obtained from a commercial bacon factory, but they did not indicate that there were any significant differences between the carcases in any of the groups.

Acknowledgments.—The author wishes to thank Professor J. G. Wright for allowing the work to be undertaken, and Miss M. C. Austin for looking after the pigs.

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The Anthelmintic Efficiency of Bephenium Hydroxynaphthoate Against the Gastro-intestinal Strongyles of Nigerian Zebu Cattle

BY

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SUMMARY.—Field trials and critical anthelmintic tests were carried out with bephenium hydroxynaphthoate against the more common gastro-intestinal strongyles found in Nigerian Zebu cattle using dosage rates of 125, 175 and 225 mg. per kg., bodyweight. At all 3 dosage rates the drug was highly effective against Cooperia spp. and Oesophagostomum radiatum *but highly efficient removal of Haemonchus spp. and* Bunostomum phlebotomum *was only obtained at 225 mg. per kg. bodyweight. At the latter level of treatment Trichostrongylus spp. were satisfactorily eliminated in the majority of animals, but not in all.*

Introduction

STRONGYLES commonly found in the gastro-intestinal tract of Nigerian Zebu cattle are *Haemonchus contortus, Haemonchus placei, Cooperia punctata, Cooperia pectinata, Trichostrongylus axei, Trichostrongylus colubriformis, Oesophagostomum radiatum* and *Bunostomum phlebotomum.* Many different anthelmintics have been tried against these species in Nigeria and found to be effective against individual parasites, but no drug has yet been reported which will effectively remove, at one dosing, this complete range of worms.

The wide spectrum of activity of bephenium salts reported by Copp, Standen, Scarnell, Rawes and Burrows (1958) suggested that one or more of these bephenium compounds might effectively remove the mixed worm burdens prevalent in Nigerian cattle. Preliminary trials at the Veterinary Research Laboratory, Vom, Northern Nigeria, indicated that bephenium hydroxynaphthoate possessed the widest range of anthelmintic activity. This was confirmed by the work of Rawes and Scarnell (1959) who described the chemical formula and properties of bephenium hydroxynaphthoate and recorded its efficiency against the common abomasal and intestinal nematodes of lambs in Great Britain.

This paper reports the results of field trials carried out in 3 White Fulani cattle herds near Vom and critical anthelmintic tests in calves at the laboratory, Vom, during 1959.

Materials and Methods

The bephenium hydroxynaphthoate used was in the form of a dispersible powder, administered as a drench. No premedication was employed in any of the animals treated as preliminary work with another bephenium salt, the embonate, did not indicate increased anthelmintic activity following the use of 60 ml. of 10 per cent. sodium bicarbonate. This agrees with the results of other workers (Rawes &

TABLE I
THE EFFECT OF BEPHENIUM HYDROXYNAPHTHOATE ON HAEMONCHUS FAECAL EGG COUNTS AT DIFFERENT DOSAGE RATES

Species	Dosage rate (mg. per kg. body-weight)	Number of positive animals treated	Mean faecal egg counts per gramme on day of treatment	Mean faecal egg counts per gramme 6 days post-treatment	Percentage reduction in mean faecal egg counts	Number showing reduction in faecal egg counts		
						80–100 per cent.	60–80 per cent.	Less than 60 per cent.
Haemonchus spp.	125	12	812	467	42	4	4	4
	175	11	1,210	209	83	7	2	2
	225	11	1,787	246	86	11	–	–

Scarnell, 1959) using a 10 per cent. copper sulphate solution as a pre-medicant. All animals were dosed early in the morning but were not subject to any specific period of starvation.

The field and critical trials involved a total of 56 White Fulani Zebu calves aged 4 to 16 months and between 64 and 184 kg. in weight. Weight estimations were made by the girth scale linear body measurement method of Ross (1959).

In the field trials individual faecal egg counts and faecal cultures were made using the methods of Roberts and O'Sullivan (1950). Bunostomum egg counts were recorded separately from the other strongyle eggs seen. Infective larvae of these strongyle eggs were differentiated by the criteria of Keith (1953), expressed as percentages and these percentages applied to the corresponding faecal egg count.

Riek and Keith (1957) in the first of their studies on anthelmintics for cattle classed the action of an anthelmintic as highly effective when it reduced the faecal egg count by 80 to 100 per cent., effective when the reduction was 60 to 80 per cent. and ineffective when the reduction was less than 60 per cent. The same percentages of classification have been adopted for the presentation of tables of results in this paper with the additional inclusion of mean pre- and post-treatment faecal egg counts and percentage reductions, to the nearest whole number, as a further guide to efficiency. Correlation between the percentage reduction of mean faecal egg counts and numbers of animals showing reduction in faecal egg counts, was good. Control calves were sampled in each herd but as no drop in mean faecal egg counts was noted they have not been included in the tables of results. In these trials no attempt has been made to differentiate the individual species of the genera involved. Three standard rates of dosage, namely 125, 175 and 225 mg. per kg. bodyweight, were used throughout the field trials.

In the critical tests, total faecal output was screened every 24 hours for 4 days following treatment and all worms expelled were identified and counted. The animals were slaughtered on the 5th day and total differential worm counts made using a dilution technique. Percentage efficiencies were then calculated. Packed cell volume percentages and serum albumen values were estimated daily using the techniques described by Ross and Armour (1959). Regular clinical examinations of the calves were made following dosing.

Results

1. Field Trials

The Effect on Haemonchus spp.

The results of treating 34 calves with positive Haemonchus faecal egg counts are shown in Table I. Anthelmintic activity was variable in the 12 animals treated at 125 mg. per kg. bodyweight and the mean reduction in egg count was only 42 per cent. Seven out of 11 calves treated at 175 mg. per kg. bodyweight showed highly effective reduction in faecal egg counts. At the higher dosage rate of 225 mg. per kg. bodyweight, in all 11 calves dosed the response was highly effective.

The Effect on Cooperia spp.

Observations on 34 animals infected with Cooperia spp. and treated at dosage rates from 125 to 225 mg. per kg. bodyweight are shown in Table II. Only 2 treatments out of 34 could not be class d as highly effective and these occurred in calves with very low pre-treatment Cooperia egg counts. The high activity of bephenium hydroxynaphthoate was further shown when calves treated at 75 mg. per kg. bodyweight, but not included in our results, showed a 68 per cent. reduction of Cooperia faecal egg counts.

The Effect on Trichostrongylus spp.

Thirty-two calves with positive Trichostrongylus faecal egg counts were treated at dosage rates from 125 to 225 mg. per kg. bodyweight. The results are shown in Table III and are extremely variable, probably due to a differential activity of the drug against the abomasal and intestinal forms of the

TABLE II
THE EFFECT OF BEPHENIUM HYDROXYNAPHTHOATE ON COOPERIA FAECAL EGG COUNTS AT DIFFERENT DOSAGE RATES

Species	Dosage rate (mg. per kg. body-weight)	Number of positive animals treated	Mean faecal egg counts per gramme on day of treatment	Mean faecal egg counts per gramme 6 days post-treatment	Percentage reduction in mean faecal egg counts	Number showing reduction in faecal egg counts		
						80–100 per cent.	60–80 per cent.	Less than 60 per cent.
Cooperia spp. ...	125	12	240	4	98	10	–	2
	175	11	613	3	100	11	–	–
	225	11	660	Nil	100	11	–	–

TABLE III
THE EFFECT OF BEPHENIUM HYDROXYNAPHTHOATE ON TRICHOSTRONGYLUS FAECAL EGG COUNTS AT DIFFERENT DOSAGE RATES

Species	Dosage rate (mg. per kg. body-weight)	Number of positive animals treated	Mean faecal egg counts per gramme on day of treatment	Mean faecal egg counts per gramme 6 days post-treatment	Percentage reduction in mean faecal egg counts	Number showing reduction in faecal egg counts		
						80–100 per cent.	60–80 per cent.	Less than 60 per cent.
Trichostrongylus spp.	125	12	76	43	43	4	2	6
	175	11	67	46	31	2	3	6
	225	9	80	16	80	6	1	2

genus. This is discussed in more detail later under critical anthelmintic tests. Results at 225 mg. per kg. bodyweight can be classed as highly effective on the percentage reduction of mean faecal egg counts but only in 6 out of the 9 individuals treated.

The Effect on O. radiatum

In 28 positive calves treated at dosage rates from 125 to 225 mg. per kg. bodyweight a highly effective reduction in faecal egg counts was obtained in 27 individuals. *O. radiatum* adult worms, like Cooperia, appear to be extremely susceptible to bephenium hydroxynaphthoate as in a few animals treated at 75 mg. per kg. bodyweight a 52 per cent. activity was observed (Table IV).

TABLE IV
THE EFFECT OF BEPHENIUM HYDROXYNAPHTHOATE ON *Oesophagostomum radiatum* FAECAL EGG COUNTS AT DIFFERENT DOSAGE RATES

Species	Dosage rate (mg. per kg. body-weight)	Number of positive animals treated	Mean faecal egg counts per gramme on day of treatment	Mean faecal egg counts per gramme 6 days post-treatment	Percentage reduction in mean faecal egg counts	Number showing reduction in faecal egg counts		
						80–100 per cent.	60–80 per cent.	Less than 60 per cent.
Oesophagostomum radiatum	125	11	151	8	95	10	–	1
	175	7	48	Nil	100	7	–	–
	225	10	167	Nil	100	10	–	–

TABLE V
THE EFFECT OF BEPHENIUM HYDROXYNAPHTHOATE ON *Bunostomum phlebotomum* FAECAL EGG COUNTS AT DIFFERENT DOSAGE RATES

Species	Dosage rate (mg. per kg. body-weight)	Number of positive animals treated	Mean faecal egg counts per gramme on day of treatment	Mean faecal egg counts per gramme 6 days post-treatment	Percentage reduction in mean faecal egg counts	Number showing reduction in faecal egg counts		
						80–100 per cent.	60–80 per cent.	Less than 60 per cent.
Bunostomum phlebotomum	125	8	290	251	13	1	–	7
	175	9	130	63	52	4	1	4
	225	10	121	6	95	9	1	–

The Effect on B. phlebotomum

Twenty-seven calves infected with *B. phlebotomum* were treated at the 3 dosage rates mentioned above. Efficiency was not satisfactory at 125 and 175 mg. per kg. bodyweight, but was highly effective in 9 out of 10 individuals treated at 225 mg. per kg. (Table V).

2. Critical Anthelmintic Tests

The results of critical anthelmintic tests at dosage rates from 125 to 225 mg. per kg. bodyweight are summarised in Table VI. The figures in this table refer only to adult worms. Immature stages were recorded before and after slaughter but the present authors feel that the standard *post-mortem* worm counting techniques employed in parasitological work are not sufficiently refined to give an accurate indication of the larvicidal activity of an anthelmintic. In view of this no data referring to immature stages has been included in our results, though some activity against these stages was observed.

The percentage efficiencies recorded in Table VI agree with those of the field trials with the exception of animal No. 336. In this calf, dosed at 125 mg. per kg. bodyweight, greatly increased activity against Trichostrongylus spp. and *B. phlebotomum* was recorded. There does not appear to be any clear explanation for this, though the calf was not in good condition prior to dosing and showed a lack of appetite which might have permitted an increased anthelmintic action. Results were closer to those of the field trials where worm burdens were higher which is to be expected when a dilution technique is employed. No depression in egg laying was apparent following treatment which increases the validity of the field experiments.

A difference in activity of bephenium hydroxynaphthoate against *T. axei* and *T. colubriformis* has been noted by Rawes and Scarnell (1959) who showed efficiency against *T. axei* in lambs. In the present

TABLE VI
CRITICAL ANTHELMINTIC TESTS WITH BEPHENIUM HYDROXYNAPHTHOATE AT DIFFERENT DOSAGE RATES

	Test number	1	2	3	4	5	6
Dosage rate (mg. per kg. bodyweight)		125		175		225	
	Animal number	336	3617	3603	3577	3596	3597
Haemonchus spp.	Number passed in treatment	10	1,590	1,180	630	970	2,650
	Number left *in situ*	Nil	180	16	120	Nil	610
	Percentage removed	100%	90%	99%	84%	100%	81%
Cooperia spp.	Number passed in treatment	12,400	5,700	17,110	9,200	12,700	21,000
	Number left *in situ*	Nil	Nil	Nil	Nil	Nil	Nil
	Percentage removed	100%	100%	100%	100%	100%	100%
Oesophagostomum radiatum	Number passed in treatment	2,230	—	870	150	50	420
	Number left *in situ*	Nil	—	10	Nil	Nil	Nil
	Percentage removed	100%	—	99%	100%	100%	100%
Trichostrongylus spp.	Number passed in treatment	1,500	200	510	1,200	700	2,000
	Number left *in situ*	Nil	400	100	1,000	100	1,400
	Percentage removed	100%	33%	84%	55%	88%	59%
Bunostomum phlebotomum	Number passed in treatment	660	Nil	120	Nil	90	20
	Number left *in situ*	4	420	728	40	10	10
	Percentage removed	99%	Nil	14%	Nil	90%	67%
Unknown worms passed*		150	100	1,100	10	300	80

* Disintegration made identification impossible.

experiments in cattle the reverse effect was noted in our critical tests, where only the male species were differentiated. In calves 3596 and 3597 dosed at 225 mg. per kg. bodyweight, a mean efficiency of 100 per cent. was recorded against *T. colubriformis* males but with *T. axei* males the mean efficiency was only 46 per cent. *T. axei* burdens were low in the animals dosed at 175 mg. per kg. bodyweight and this precludes definite conclusions from being drawn. Further work is necessary to clearly elucidate the difference in activity against these two parasites of cattle.

3. Toxicity

No obvious clinical signs of toxicity were noted in any of the 6 animals slaughtered. Packed cell volume percentages rose following treatment and subsequent elimination of parasites and serum albumen values remained steady. In one animal, No. 336, an area of inflammation was noted in the abomasum which histologically revealed a haemorrhagic gastritis. It is unlikely this was caused by the drug but probably contributed to the pica noted previously in this animal.

Discussion

Lee, Armour and Ross (1959) have indicated that only negligible infestations of Haemonchus spp., Cooperia spp., Trichostrongylus spp., *O. radiatum* and *B. phlebotomum* are acquired by cattle in Northern Nigeria during the dry season and that animals carry infective material from one wet season to the next. An anthelmintic, effective against the adult egg-laying stages of all these parasites, would, if given towards the end of the dry season, greatly reduce the numbers of infective larvae available on the pasture during the next wet season. Bephenium hydroxynaphthoate given orally at 225 mg. per kg. bodyweight meets the requirements of such an anthelmintic and is non-toxic, but the extent of its application at this dosage rate in cattle would be dependent on its cost.

Rawes and Scarnell (1959) have demonstrated the high activity of bephenium hydroxynaphthoate at 250 mg. per kg. bodyweight, against gastro-intestinal nematodes in lambs in Great Britain, which suggests that the drug would also be of value as a dry season anthelmintic for the smaller ruminants in Northern Nigeria.

Acknowledgment.—The authors are indebted to the Wellcome Foundation, Ltd., for providing samples of the drug and to Mr. J. T. R. Evans of the same organisation for helpful criticism and information on the properties of the anthelmintic. Acknowledgments are also due to Mr. R. P. Lee, Principal Veterinary Research Officer and Mr. J. G. Ross, Veterinary Research Officer for their constant interest and advice, to Messrs. Princewell, Muyi and Eze for technical assistance and to the Director of Veterinary Research for permission to publish the paper.

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The Detection of *Cysticercosis bovis* in the Abattoir

BY

A. GINSBERG

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SINCE early times it has been noted that meat may convey to man certain diseases which affect domestic animals. One of these ailments was cysticercosis, commonly described as " measles " in beef. For a considerable period the opinion prevailed that any case of tapeworm found in Europe was due to direct or even indirect contact with someone from the Orient or Africa. This grave misconception was finally clarified by scientific evidence that *T. saginata* will develop only if man consumes beef which is infested with *C. bovis*.

By the end of the last century this discovery made the Authorities of the Berlin abattoir introduce a visual examination of all carcases for *C. bovis*. Very soon, however, it became obvious that visual examination on its own was not sufficient and that it must be supported by incisions into the muscles. To improve the method of detection, therefore, the German State meat inspection service introduced incisions into the muscles of mastication and heart.

Britain regarded in the past all routine incisions into the carcase flesh as an unnecessary mutilation, all the more so since *C. bovis* was not reported to be found in the abattoirs, and as the eating habits were quite different from the Continent of Europe where taeniasis was quite a common occurrence. It was, however, forgotten that Ostertag's motto read " the more you search, the more you will find," referring to the incisions into the muscles, and that a well underdone steak " à l'Anglaise " can carry as many viable cysts as meat " à la Tartar." It was not, therefore, surprising that once Belfast's Chief Veterinary Officer adopted in 1948 the German routine incisions, 0.3 per cent. of 2,000 head of cattle were found to be infected with *C. bovis*. Since then other British abattoirs have adopted the German inspection procedure and Memo 3/Meat of 1952 has introduced the incisions of the muscles of mastication, and set aside a special section dealing with this zoonose.

As cysticercosis affects both the health of the consumer and even more so the country's economy, public health authorities are determined to eradicate this parasite. The part meat inspection can play in this campaign has been proved on the Continent. While it cannot eradicate cysticercosis it constitutes a most valuable detector and interceptor of *C. bovis*.

Cysts of *C. bovis* can be found anywhere in the carcase meat and viscera, but there seems to be a special affinity towards some parts which rightly or wrongly are described as " sites of predilection." Believing that a thorough search of these sites would be helpful in the detection of *C. bovis* the legislator of the South African meat inspection regulations of 1934 insisted not only upon the German procedure, but added that an incision must be made into the muscles of the shoulder below the elbow, and some other 14 incisions in carcases showing one or more cysts. Despite the fact that this procedure has been accused of being wilful mutilation of valuable carcase flesh, the method has proved its value. After 26 years the Union of South Africa, once a well-known focus of cysticercosis, has now reached a fully acceptable level despite the fact that its native population has not substantially altered its eating habits.

Admittedly, there should be a practical limit to the number of incisions made during routine inspection of carcases, but in countries where the population is inclined to prefer raw or well underdone meat, and where the standard of hygiene and sanitation is low, half-hearted measures are useless.

As the eating and living habits of Kenya's native population favour the life cycle of *Taenia saginata*, it was decided in 1952 to accept the South African procedure *in toto* until such time when Kenya's meat inspection service would be ready to evaluate its own observations. In 1955 Kenya's meat inspection adopted the South African procedure with some modifications. The tongue is being examined visually and the ventral aspect of the roof is being incised. Extensive incisions into the external and internal muscles of mastication are asked for, but the heart shall be cut only if necessary. The oesophagus and all muscles exposed during splitting of the carcase are inspected visually, and 3 incisions into the muscles of the shoulder close to the elbow joint are made. The abductor muscle of the hindquarter is also incised parallel to the symphysis pelvis. Any other incision or excision is permissible if the presence of *C. bovis* is suspected.

Calves below the age of 6 weeks are examined in the same way, as cysts have been found in newly born animals.

To-day, after examining more than 400,000 head of cattle, only 4 cases were reported where the housewife had found a single cyst, in each case during the preparation of meat in the kitchen.

No method can guarantee full security, but in countries where the incidence of cysticercosis is high a procedure must be adopted which without undue mutilation, can reveal the overwhelming majority of infested carcases. Kenya's experience has so far proved the diagnostic value of the shoulder cuts.

With the help of thorough inspection of all carcases, propaganda, health education and mass de-worming campaigns, Kenya has managed to reduce the incidence of cysticercosis during the last 3 years by 7 per cent.—an achievement worthy of reporting.

Acknowledgment.—This paper is published by kind permission of the Director of Veterinary Services, Kenya.

The R.C.V.S. Disciplinary Committee

A meeting of the Disciplinary Committee was held at the Royal College on the morning of March 29th. The Chair was taken by Mr. T. M. Mitchell; Mr. Peter Baylis presented the cases for the College and Mr. E. V. Falk, Barrister-at-Law, was Legal Assessor.

Mr. James Stephen McElhone

In presenting this case, Mr. Baylis said that in November, 1946, Mr. McElhone pleaded guilty in Glasgow to a charge of attempting to drive a motor vehicle when under the influence of drink. That conviction was reported to the Royal College, and Mr. McElhone's solicitors pointed out at the time that it had been established in Court that he had taken only a very small quantity of alcohol which affected him unduly, by reason of nervous strain and overwork. In November, 1955, and again in November, 1959, similar changes had been sustained in the Sheriff Court at Glasgow. On the latter occasion Mr. McElhone had been disqualified for life from holding a driving licence.

Appearing for the defendant, Mr. J. G. Quigley, solicitor, did not dispute the submission that his client had been guilty of conduct disgraceful in a professional respect. In mitigation, he pointed out that there had been a period of many years between the first and later offences, and on the last occasion his client had just been gravely ill in hospital and had also suffered acute domestic anxiety. Mr. McElhone was now a patient of an eminent Glasgow physician. Mr. Quigley also produced a number of testimonials, in which his client's professional skill and care were highly praised.

The Chairman, in announcing the Committee's decision, said that action would be deferred for two years, at the end of which time, they would require the defendant to produce evidence of his conduct.

Mr. Francis Nesfield Andrewes

Presenting the College's case, Mr. Baylis said that Mr. Andrewes had been convicted on a number of occasions for failure to pay National Insurance contributions. On each of these occasions he had pleaded guilty.

Mr. Andrewes, who was not legally represented, told the Committee that until 1945 he was in a successful country practice. He had then been involved in a motor accident, when both his legs were broken. Treatment, and absence from practice, had caused him severe financial loss, and not feeling strong enough to continue agricultural practice, he had bought a small-animal practice in London. That practice had not been a fortunate investment, and in addition he broke his right arm last year, thus having once again to relinquish practice for a period and send clients to his colleagues. He submitted a medical certificate to the effect that he was in a state of nervous anxiety due to these misfortunes, and suffered from insomnia.

The Committee found Mr. Andrewes's conduct disgraceful in a professional respect. He was told by the Chairman that his case had been reviewed with sympathy, and he would be required to appear before the Committee again in one year's time and to satisfy them of his professional behaviour during that period.

Mr. James Bhattacharjee

Consideration of an application by Mr. James Bhattacharjee of Rangoon for his name to be restored to the Register was deferred until the next meeting of the Disciplinary Committee, during which time Mr. Bhattacharjee would be asked to furnish testimonials as to his conduct since his name was removed from the Register on April 10th, 1957.

Current Literature

ABSTRACTS

Recent Advances in the Epidemiology of Salmonellosis in Man and Animals. McCOY, J. H. (1959). *Sanitarian, Lond.* **68.** 117.

In this paper Dr. McCoy summarises the findings of many workers who have studied the chain of infection of salmonellosis from its beginnings in animal feeding-stuffs and organic fertilisers, through the animal on the farm, to the slaughterhouses, the food preparation factories, and finally to the infected human being.

The author feels that an attack directed at any one link in the chain of infection is likely to prove ineffective in the reduction of salmonellosis. Prohibition of import of bone and fish meal, for example, would have very little effect since many Salmonellae are indigenous to our flocks and herds.

Something might be done, however, by the improvement of slaughterhouse techniques, since the abattoir has been shown to act as a focal point for the transmission of infection among animals awaiting slaughter, and it is here that Salmonellae are distributed by widespread contamination of carcases. It is suggested that the waiting time of animals prior to slaughter should be made as short as possible, that the lairages should be kept clean, and provided with a water supply which cannot be contaminated by faeces.

In the discussion following the paper it was suggested that there should be closer co-operation between the medical and veterinary professions, public health personnel, and representatives of the National Federation of Meat Trades, in the study of the problem and the recommendation of improvements. I. W. J.

The Isolation of Salmonellae from the Mesenteric Lymph Nodes and Faeces of Pigs, Cattle, Sheep, Dogs and Cats and from Other Organs of Poultry. WILLIAMS SMITH, H. (1959). *J. Hyg.* **57.** 266.

The author examined numbers of pigs, cattle, sheep, cats, and dogs for the presence of Salmonellae

in the mesenteric lymph nodes. In a survey of chickens the intestinal wall, spleen, and bile were examined. In all cases, the animals were healthy or not suffering from clinical salmonellosis.

Sixty out of 500 pigs were harbouring Salmonellae, the most prevalent types being *S. typhimurium, S. anatum, and S. cholerae-suis.* Salmonellae were found in 9 of 200 dogs, and 5 of 200 cats. None were found in the cattle, sheep, or chickens.

Although the significance of the presence of Salmonellae in the mesenteric lymph nodes of animals is unknown, it is important to realise that the serotypes found are those commonly associated with outbreaks of food poisoning in man. Likewise, the high isolation rate in pigs reflects the fact that pig meat is the meat most commonly incriminated.

Four of the dogs examined were harbouring *S. heidelberg,* which is the second most important serotype in outbreaks of food poisoning in this country. Dogs, therefore, cannot be ignored as possible sources of infection for man.

There appeared to be a definite relationship between the serotypes of Salmonellae found in the mesenteric lymph nodes of pigs and those found in fish meal, meat and bone meal, and other protein supplements used in animal feeding in this country.

I. W. J.

Two Foot Syndromes in Sheep Following Excessive Foot Bathing. PRYOR, W. J. (1959). *Aust. Vet. J.* **35.** 493.

During attempts to eradicate foot-rot, footbaths are not normally used sufficiently frequently. In this paper, 3 outbreaks of disease are described which followed: (1) thrice weekly footbathing in 10 per cent. formalin for 4 weeks; (2) weekly footbathing in 20 per cent. formalin (sometimes with added kerosene); (3) twice weekly footbathing in 1.25 to 2.5 per cent. (as As_2O_3) arsenic.

All these treatments produced foot lesions and the author points out the dangers of over-treatment. It is suggested that, after paring, sheep should stand in 5 per cent. formalin for 20 minutes, and thereafter should be walked through this solution twice weekly.

G. B. S. H.

"Trolene" (Dow E.T.57) Trials 1958-59. KERRY, J. E. (1959). *Irish Vet. J.* **13.** 176.

Further warble fly experiments have been carried out in Ireland using Trolene at 5 g. per 100 lb. bodyweight. The animals were drenched with a suspension prepared from a dispersible powder and a total of 332 cattle were used. To observe the effect of repeated dosing, animals were dosed in November, December, and January. Fifty-three were dosed only in November and 184 warbles were counted. Fifty-eight were dosed in November and December and 57 warble larvae survived. Fifty-five animals received 3 doses in November, December, and January and only 4 larvae were found in this group. Three thousand and eighty-six warbles were counted on the 166 untreated controls but as this is the total of monthly counts during the period March to July, it is pointed out that some larvae may have been counted more than once.

Further Trials with "Trolene" Against Warble Fly Larvae. HATCH, C. (1959). *Irish Vet. J.* **13.** 193.

Further trials with Trolene (Dow E.T.57) have shown its effectiveness against the larvae of the warble fly (*Hypoderma* spp.). Two trials in Ireland are described, the first dosing in September and the second in mid-November. In both trials the Trolene was administered at the rate of 5 g. per 100 lb. bodyweight (*i.e.* 110 mg. per kg.) as a single drench preparation from a 40 per cent. wettable powder.

The early September treatment caused a 100 per cent. reduction in the number of larvae reaching the backs of the animals. The November treatment was less effective and caused a reduction of 70 per cent.

I. R. H.

Coliform Peritonitis of Chickens. GROSS, W. B., & SIEGEL, P. B. (1959). *Avian Diseases.* **3.** 370.

The authors describe an experiment suggesting that the development of egg peritonitis requires the concurrent presence of yolk material and of pathogenic strains of *Escherichia coli.*

Three groups of 14 hens were given 25 ml. of sterile egg yolk intraperitoneally. In addition one group received an *E. coli* culture intraperitoneally while in another the culture was introduced into the lower oviduct. Peritonitis developed in 10 of the 14 birds receiving the *E. coli* intraperitoneally, and 8 of the 10 died. Six of the 14 receiving the oviduct installation developed peritonitis, and 4 died. None of those receiving yolk only developed peritonitis, while control groups receiving *E. coli* without yolk showed little ill-effect.

Avian Enteric Cytopathogenic Viruses. BURKE, C. N., LUGINBUHL, R. E., & JUNGHERR, E. L. (1959). *Avian Diseases.* **3.** 412.

Using chicken kidney cells, the authors isolated a number of enteric viruses from the faeces of both healthy and diseased fowls. This is said to be the first report of the isolation of enteric viruses from birds.

Keratoconjunctivitis in Turkeys. BIERER, B. W. (1958). *Vet. Med.* **53.** 477.

During the colder months of the year this disease was common in breeding stock kept under exposed conditions. Affected birds showed swelling of the eyelids, followed by keratitis with the production of much cheesy material. Later the eyelid became necrotic and distorted. The condition was usually unilaterial.

Examination of birds from 6 flocks failed to show the consistent presence of any pathogen, although various "secondary" moulds and bacteria were present. Attempts to reproduce the disease by the inoculation of various pathogens failed except in the case of 1 turkey in which the third eyelid was inoculated with PPLO. However, attempts to repeat this were not successful. Various mechanical injuries of the eye failed to produce the condition.

The Prophylactic and Therapeutic Value of Furazolidone Against Infectious Sinusitis of Turkeys. GRUMBLES, L. C., FLOWERS, A. I., & MOORE, R. W. (1959). *J.A.V.M.A.* **135.** 510.

Furazolidone, at the rate of 100 or 200 g. per ton of food, was of limited value for the prevention of sinusitis in experimentally infected turkeys.

Treatment was effective when 200 mg. was injected into each affected sinus as a suspension of small particle size. A large-particle suspension was far less effective.

An Infectious Agent Producing Hepatitis in Turkeys. SNOEYENBOS, G. H., BASCH, H. I., & SEVOIAN, M. (1959). *Avian Diseases.* **3.** 377.

The authors report an infectious hepatitis producing a 1 to 20 per cent. mortality in turkey poults 1 to 5 weeks of age. The livers showed numerous small pale foci partly obscured by congestion and haemorrhagic lesions. There were similar foci in the pancreas. The infection was easily transmitted to experimental poults, but the disease thus produced was always subclinical. Chicks were not susceptible. The cause appears to be a virus.

Virus Hepatitis in Turkeys. MONGEAU, J. D., TRUSCOTT, R. B., & CONNELL, M. C. (1959). *Avian Diseases.* **3.** 388.

The disease described by these authors appears to be the same as that reported above by Snoeyenbos *et al.* (1959). It occurred in Canada in poults hatched from eggs imported from California. The livers of affected poults were enlarged and congested and showed pin-point haemorrhages together with grey necrotic areas 1 to 5 mm. in diameter. Experimental studies gave results essentially similar to those described above.

E. A. G.

Certain Characteristics of the Virus of Infectious Enteritis of Mink and Observations on Pathogenesis of the Disease—Preliminary Report. MYERS, W. L., ALBERTS, J. O., & BRANDLY, C. A. (1959). *Canadian J. Comp. Med.* **23.** 282.

Since the work of Wills (1952) it has been known that there is a close antigenic relationship between the virus of mink enteritis (MEV) and the virus of feline enteritis (FEV). To clarify the relationship between the two agents, Myers, Alberts, and Brandly did four experiments to obtain information on the following points:—

(1) The infectivity of MEV and FEV for mink.

(2) The infective concentration of MEV in certain organs and tissues.

(3) The antigenic relationship between MEV and FEV.

(4) The effect of storage-time and temperature on MEV.

Sixty-four female mink, 10 to 16 weeks of age, were used in these experiments. The MEV strains (Wisconsin and Ontario) were obtained from field cases, but the FEV was a laboratory strain used in production of commercial feline enteritis vaccine. The signs of disease considered indicative of infection were anorexia, diarrhoea, intestinal casts and a total white cell count of less than 5,000 per mm^3.

Both MEV and FEV produced overt disease in mink but obvious disease was more easily produced with MEV.

The final infective dilutions of various tissues containing MEV were: liver 10^{-2}, spleen 10^{-5}, and intestine 10^{-5}. Both lung and kidney were infective at a dilution of 10^{-3} but the endpoint was not reached.

The attempt to immunise with commercial feline enteritis vaccine gave inconclusive results. One of the 2 mink challenged with MEV showed a reduced white cell count and overt signs of disease. However, 1 of the 2 challenged with FEV developed a leucopenia. In cross-protection tests using serum, it was found that anti-MEV serum would protect against MEV and that anti-FEV serum would protect against FEV. However, when mink were given anti-MEV serum and then challenged with FEV or conversely, all showed a reduced white cell count. Two mink which had recovered from MEV and were challenged with FEV showed anorexia and leucopenia but only 1 of 3 animals which had recovered from MEV was able to withstand challenge with MEV without the white cell count being reduced. These experiments suggest that there may be some antigenic differences between the strains of MEV and the laboratory strain of FEV.

MEV, in the form of 20 per cent. tissue suspension, was kept at 56° C. for 30 minutes, 56° C. for 120 minutes, 25° C. for 2 days, 25° C. for 5 days, and 5° C. for 5 days. The virus withstood all these treatments except 56° C. for 120 minutes.

A. O. B.

DISEASES OF ANIMALS ACT, 1950—GREAT BRITAIN
Summary of Returns of Confirmed Outbreaks of Scheduled (Notifiable) Diseases

Period		Anthrax	Atrophic Rhinitis	Foot-and-Mouth	Fowl Pest	Sheep Scab	Swine Fever
1st to 15th March, 1960		23	—	3	88	—	55
Corresponding period in	1959	15	—	—	14	—	49
	1958	6	—	6	7	—	43
	1957	30	—	2	41	—	42
1st Jan. to 15th Mar., 1960		67	—	10	825	—	232
Corresponding period in	1959	50	—	1	195	—	223
	1958	37	1	97	173	—	212
	1957	102	2	13	232	—	181

News and Comment

THIS WEEK'S VETERINARY TELEVISION TALK

The veterinary surgeon who frequently gives a television talk in the B.B.C. Sunday farming programme has been good enough to send to the Editor a copy of his script so that members of the profession who may be questioned about the talk by their clients will have an idea what it is about if they are not able to look in. The transmission takes place on April 17th at 12.40 p.m.

The subject of the talk is foot conditions in cattle and the speaker will pay detailed attention to foul-in-the-foot. He will remind farmers that this condition, caused by *Fusiformis necrophorus*, often arises from a wound or crack caused by such foreign bodies as wire or broken glass among the herbage. He will say that another predisposing factor is the repeated soaking of cows' feet in mud, dung, etc. Having dealt briefly on the clinical appearances which, when they are observed, call urgently for a visit from a veterinary surgeon, the broadcaster will indicate how professional treatment would be carried out. He will then pass on to prevention by such means as clearing grazing land of broken metal, glass, etc., and concreting yards, gateways, and so on to help keep animals' feet clean. Additionally, the television veterinary surgeon will recommend walking cows once a week through a foot bath to diminish infection, and every day over a thin bed of lime in order to keep the skin over the heel areas hard and dry.

THE INTERNATIONAL SCIENTIFIC FILM ASSOCIATION

The 14th Annual Congress of this Association will be held in Prague from September 18th to 27th. If any reader has a veterinary film or films, preferably recently produced, which he feels would be of interest, he is invited to communicate with Mr. Lex Hornsby, Scientific Film Association, 3, Belgrave Square, London, S.W.1, giving details and a synopsis. It is requested that this should be done before July. In writing to Mr. Hornsby, it should be indicated whether the film or films should be classified as research, educational, or popular science. The entrance fee for those attending is 100 Kcs.

THE BRX CLUB

Absent friends both home and abroad, including the secretary Tony King at present in Philadelphia, will be interested to know that the BRX Club held a vivacious and successful dinner on Saturday, April 2nd, 1960. It was attended by 64 members including three previous Guests of Honour, Professors J. McCunn and A. Messervy and Dr. J. N. Oldham.

The assembly received the kind messages from absent friends, delivered by the President, Professor C. W. Ottaway, with deep appreciation, and they were further entertained by speeches from the Guest of Honour, Dr. E. L. Taylor, who spoke of things both parasitic and otherwise, and Phillip M. Bennett (1946).

HONOUR FOR MAJOR C. DAVENPORT

At the recent annual general meeting of the British Horse Society, the President, the Duke of Norfolk, presented the Society's Medal of Honour to Major C. Davenport, O.B.E., F.R.C.V.S., for outstanding services to the Society and the horse. He is the first member of the profession to be so honoured. The award was made in particular reference to his work for The Pony Club of which he has been a member of the governing body for the past 14 years. Some 28,000 children in this country to-day are being taught the care of their ponies according to principles laid down by him.

REFRESHER COURSE IN LONDON

The following refresher course, open to all members of the profession, will be held during May:—

On Monday, May 2nd, at the Hospital, Zoological Society of London, 5.30 p.m., *Handling, Restraint, Anaesthesia, and Clinical Conditions of the Large Wild Animals.*

May 9th, at the Royal Veterinary College (Pathology Classroom), 5.30 p.m., *The Monkey: Identification, Clinical Approach and Pathological Studies.*

May 16th, at the Royal Veterinary College, 5.30 p.m., *The Budgerigar: Clinical Conditions, Aviary Problems and Pathology.*

The refresher course will include demonstrations of clinical and pathological photographs, specimens, etc., and it will be helpful if members who are proposing to attend this course will inform the Bursar, Royal Veterinary College, not later than Thursday, April 28th.

PERSONAL

Mr. F. P. Lawton, M.R.C.V.S., D.V.S.M., has been appointed Chief Veterinary Officer for the City of Manchester. He succeeds Mr. David E. Orr, who retires on superannuation on April 20th.

Birth

MARTIN.—On March 28th, 1960, to Renee, wife of Bryan A. Martin, B.V.SC., M.R.C.V.S., of Sheffield, a daughter, a sister for Nicholas.

COMING EVENTS

April

19th (Tues.). Joint Meeting of the Scottish Branch with the Society of Practising Veterinary Surgeons in the Golden Lion Hotel, Stirling, 2 p.m.

20th (Wed.). Meeting of the Southern Counties Veterinary Society at the Royal Hotel, Winchester, 7.30 p.m.

Meeting of the Section of Comparative Medicine at the Royal Society of Medicine, 5 p.m.

Meeting of the Warwickshire Veterinary Club at the Regent Hotel, Leamington Spa, 8 p.m.

21st (Thurs.). Business Meeting of the Herts. and Beds. Veterinary Society at the George Hotel, Luton, 7.30 p.m.

27th (Wed.). Meeting of the Staffordshire and Derbyshire Veterinary Club at the White Hart, Uttoxeter, 7.30 p.m.

29th (Fri.). Meeting of the Yorkshire Veterinary Society at the Royal Station Hotel, York, 2.30 p.m.

30th (Sat.). Meeting of the N.W. Region of the B.S.A.V.A. at the Queen's Hotel, Manchester, 7.30 p.m.

Dinner and Dance of the Central Veterinary Society at the Fellows Restaurant of the Zoological Society, Regent's Park, N.W.1, 7 p.m.

Annual General Meeting of State Veterinary Officers in the auditorium of the Wellcome Research Institute, 183-193 Euston Road, London, N.W.1., 4 p.m. The Annual Dinner will follow at the Criterion Restaurant at 6.30 p.m.

May

6th (Fri.). Annual Dinner of R.V.C.A. at the Royal Veterinary College, Camden Town, N.W.1, 6.30 p.m.

Annual Dance of Midland Counties Veterinary Association at Eaton Lodge Hotel, Rugeley, 8 p.m. to 1 a.m.

12th (Thur.). Meeting of the South-Eastern Veterinary Association at the Royal Star Hotel, Maidstone, 7 p.m.

June

10th (Fri.). Annual Dinner of the R.A.V.C. Officer's Club at the Naval and Military Club, 94, Piccadilly, London, W.1.

July

6th (Wed.). Meeting of the Technical Development Committee of the B.V.A., at 7, Mansfield Street, 10.30 a.m.

August 28th to September 3rd. 78th Annual Congress of the British Veterinary Association in Glasgow.

B.V.A. COMMITTEE AND COUNCIL MEETINGS IN EDINBURGH

Tuesday, April 19th
Late Evening. Finance Sub-Committee.

Wednesday, April 20th
10 a.m. Small Animals Committee.
12 noon. Home Appointments Committee.
2.15 p.m. Veterinary State Medicine Committee.
4 p.m. Parliamentary and Public Relations Committee.

Thursday, April 21st
10.30 a.m. Farm Livestock Committee.
2 p.m. General Purposes and Finance Committee.

Friday, April 22nd
10.15 a.m. Council Meeting.

ADDRESSES OF DISEASE INFECTED PREMISES

The list given below indicates, first the county in which are situated the premises on which disease has been confirmed, followed by the postal address and date of outbreak.

Anthrax

Cornwall. Tregarrick Mill, Duloe, Liskark (Apr. 5).
Kircudbright. Minnydow Farm, Kirkpatrick-Durham, Castle Douglas; Woodpark Farm, Kirkpatrick-Durham, Castle Douglas (Apr. 6).
Perth. West Pitnacree Farm, Alyth (Apr. 6).
Salop. Brickwalls Farm, Alkington, Whitchurch (Apr. 6).
Wigtown. Barnsallie Farm, Glenluce, Newton Stewart (Apr. 7).

Fowl Pest

Beds. Holding C.8, Great North Road, Chawston (Apr. 5); 131, Mile Road, Bedford (Apr. 6).
Berks. Millets Farm, Garford (Apr. 5).
Cambs. The Bakery, Bourne, Cambridge (Apr. 6).
Dorset. Nyland Farm, Nyland, Gillingham (Apr. 6).
Essex. Deynes Farm, Debden, Saffron Walden (Apr. 5); Forest Lyn, Broomfield, Chelmsford; The Forge, Debden, Saffron Walden (Apr. 7).
Glouc.s. Brookfield Farm, Bredons Norton, Tewkesbury (Apr. 5); The Home Farm, Bredons Norton, Tewkesbury (Apr. 6); Home Farm, Gotherington, Cheltenham (Apr. 7).
Hants. 1, Poveys Cottages, Ramsdell, Basingstoke (Apr. 5).
Hunts. Hormead, Common Road, Hemingford Abbots, Huntingdon; White Cottage, Hemingford Grey, Huntingdon; Hill Top Farm, Yelling, St. Neots (Apr. 5); 75, Silver Street, Buckeden, Huntingdon; Cambridge Road, Hemingford Grey, Huntingdon (Apr. 6); 6, Cambridge Road, Godmanchester, Huntingdon; Grove Villa, Cambridge Road, Godmanchester, Huntingdon; Hill Farm, Grafham, Huntingdon; Hawthern Lodge Poultry Farm, Great Staughton, Huntingdon (Apr. 7).
Norfolk. Woods Farm, Bawdeswell, East Dereham (Apr. 6).
Notts. Whitewater Farm, Ollerton, Newark (Apr. 5); Wingrove, Breck Road, Walesby, Newark; Whiteborough Farm, Teversall, Sutton-in-Ashfield (Apr. 6).
Suffolk. Willow Farm, Coddenham, Ipswich (Apr. 6).
Surrey. Silverdale, Horsham Lane, Ewhurst (Apr. 6).
Worcs. Hayes Farm, Berrow, Worcester (Apr. 6).

Swine Fever

Dorset. Forest Farm, Gillingham (Apr. 7).
Lancs. Yew Tree Farm, Ormskirk; Beech Farm, Eaton Road, Liverpool, 12 (Apr. 7).
Middlesex. Stockley Bridge Piggeries, Chapel Lane, West Drayton (Apr. 5).
Norfolk. Common Farm, Fleggburgh, Great Yarmouth (Apr. 5); Silver Street, Fleggburgh, Great Yarmouth (Apr. 6); Dudwick Farm, Buxton, Norwich; Church Farm, Swanton Abbot, Norwich (Apr. 7).
Somerset. Cossington House Farm, Cossington, Bridgwater (Apr. 6).
Staffs. Bosty Lane Farm, Bosty Lane, Aldridge, Walsall (Apr. 5).

ADVERTISER'S ANNOUNCEMENT

CIBA LABORATORIES LIMITED announce the introduction of Vetidrex, a new highly effective oral diuretic for the treatment of udder oedema. Vetidrex (hydrochlorothiazide a product of CIBA research) is non-mercurial and well-tolerated. It may be administered by intravenous or intramuscular injection, and it is available as an injectable solution in vials of 10 c.cm. containing 50 mg. per c.cm.

Letters to the Editor

The views expressed in letters addressed to the Editor represent the personal opinions of the writer only and their publication does not imply endorsement by the B.V.A.

Veterinary Education—an Anomaly

Sir,—A university appointment in THE VETERINARY RECORD of April 9th invites applications for a Lectureship in Veterinary Physiology. The scale of salary mentioned is slightly more favourable to those applicants who are medically qualified. This seems to me to imply that a veterinary surgeon specialising in physiology is considered less suitable than a medical physiologist.

I would suggest that, apart from the fact that all three classes of physiologists referred to in the advertisement will have studied general physiology, the veterinary surgeon in this field will have the necessary anatomical and histological background as well as a knowledge of ancillary subjects, *e.g.* animal nutrition, and also experience in comparative studies between the different species of domesticated animals. Furthermore, he will have the advantage of being able to cite examples from a relevant clinical field and of not being restricted to the field of human medicine. An internal examiner (veterinary surgeon) told me once that his external examiner (a medical man) in veterinary physiology complained that when he asked one of the examinees to tell him something about the gall-bladder of the horse the reply was that the horse had no gall-bladder! The latter fact came as a great surprise to the external examiner.

The anachronistic idea that the man who has taken medical qualifications is, *ipso facto*, superior to all others in the field of applied biology apparently still exists in Scotland. This would not seem to harmonise well with their traditional claims to leadership in education.

Is it not time that our representatives of the R.C.V.S and B.V.A. took appropriate action to see that the veterinary interest in this important matter affecting veterinary education and our professional standing, is not disregarded as it appears to be in the case referred to and on other similar occasions over recent months?

Yours faithfully,
D. G. EARNSHAW.

School of Veterinary Medicine, T.C.D.,
Dublin.
April 11th, 1960.

"Solubilising"

Sir,—We accept responsibility for the use of this evidently interesting word in a recent circular to the profession introducing a new product. We cannot, however, claim originality as the word is being recognised and understood by all acquainted with physical chemistry.

The property of "solubilising" as distinct from "dissolving" is well documented in standard texts dealing with chemical complexes such as iodophors, and we had thought it reasonable in a brochure supported by 17 published references, to employ an accepted and technically descriptive term rather than to attempt a lengthy paraphrase using words of fewer syllables but of little recognised significance.

Finally, may we advise that the appropriate departments of most pharmaceutical companies are at all times pleased and prepared to make available detailed published information sought by members in practice who wish information on any particular claim or property, but who have neither the leisure time nor the facilities to peruse the often extensive original literature.

Yours faithfully,
WM. R. HORN,
Manager.

Veterinary Information Department,
Evans Medical Ltd.,
Speke,
Liverpool.
April 6th, 1960.

Royal Society of Health Congress

Sir,—May I, through the courtesy of your columns, bring to the notice of all veterinary surgeons attending the Royal Society of Health Congress at Torquay that an informal luncheon has been arranged at the Hotel Victoria on Friday, April 29th, 1960 at 12.30 p.m. The cost will be 12s. 6d. per head.

Will all those members of the profession intending to be present please let me know by April 25th. The Congress will undoubtedly strain the catering arrangements in Torquay, and members may be sure of good company and a good lunch prior to the meeting of the veterinary hygiene section at 2.30 p.m. on the same day.

Yours faithfully,
J. A. DALL,
Hon. Local Secretary.

61 Abbey Road,
Torquay.

Metabolic Disorders in Sheep

Sir,—I was greatly interested in the letter from D. R. Lane (March 15th) concerning hypocalcaemia in ewes. This lambing time I have had a large number of pre-lambing recumbency cases which have responded quickly and fully to calcium/phosphorus/magnesium injections. The same good response has been met with in post-lambing recumbencies. Twin lamb disease, as I understand it, has been very rare in this locality.

Yours faithfully,
R. A. ANDERSON.

60 Main Street,
Cayton,
Scarborough,
Yorkshire.
April 11th, 1960.